INNOVATION in Nova Scotia

ENTREVESTOR INTELLIGENCE

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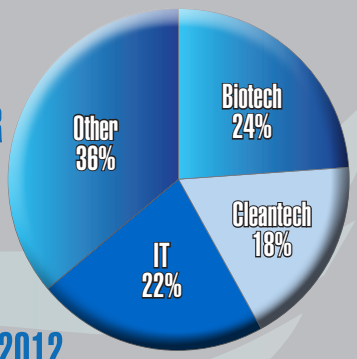
September 2012 · Volume 1

Growth of Venture Capital in Nova Scotia



VC FUNDING JAN-AUG 2012

2nd Act Innovations	$500,000	Livelenz	$1 million
aioTV	$1 million	SABRTech	$200,000
Azorus	$500,000	Scotia Motor Works	$500,000
CarbonCure	$1.1 million	Seaforth Energy	$2 million
DeNovaMed	$500,000	STI Technologies	$2 million
Equals6	$250,000	Techlink Entertainment	$5.5 million
Intelivote	$800,000	TruLeaf Sustainable	$250,000
		TOTAL	**$16.1 million**

The Evolution of an Ecosystem

Chris Dobbin's email arrived minutes after the interview ended one day in July. The Precipice Capital President had just checked with his client, Halifax Biomedical, and had got permission to say the Mabou-based company was working on a $17 million fundraising, of which $10 million would be equity.

Ten million dollars in equity.

Certainly two Nova Scotian companies had raised more than that in 2011, but it was striking that it is becoming almost commonplace for Nova Scotia innovation companies to aim for eight-figure raises from venture capital firms. Only two years ago, the total VC investment in Nova Scotia companies amounted to $10.2 million (admittedly in a weak year) and now one company was hoping to raise that much in one bite.

CEO Chad Munro soon confirmed Halifax Biomed was indeed after $17 million in total funding. He and his board had calculated what it would cost to install three of the company's roentgen stereophotogrammetric analysis, or RSA, devices, which allow two simultaneous X-rays to be taken from different angles.

Continued on Page 11

Few Rivals For Halifax's Imaging Platform

When the Halifax biotech Immunovaccine Inc. was trying to establish that its drug delivery system could reduce the size of cancer tumors in mice, it had one big advantage – access to the imaging technologies in Halifax.

The company was preparing to list on the TSX Venture Exchange, and it needed proof that its Depovax platform could effectively deliver a cancer treatment that would not just arrest the growth of tumors but abolish them altogether. So its scientists tapped the advanced imaging technology in Halifax, which produced instant visual images showing the shrinking and disappearance of tumors in live mice, rather than having to kill and dissect several mice over time.

"We have benefited from our ongoing collaboration with the imaging team to … demonstrate that the tumors in animal models were truly eliminated by vaccination, with no evidence of residual tumor," said Marc Mansour, chief science officer at IMV.

This is just one example of how the biotech community in Atlantic Canada is benefiting from a conscious decision several years ago to establish one of Canada's most advanced imaging centres in Halifax. In the past decade, the National Research Council, Dalhousie Medical School and the city's

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What's Inside

Editor's Note

ABOUT ENTREVESTOR

Entrevestor.com is the leading source of news and data for Atlantic Canadian entrepreneurs. Input your email address on our homepage to receive our daily updates.

Welcome to Entrevestor Intelligence!

Innovation in Nova Scotia is the first in a series of publications that Entrevestor will produce on innovation in Atlantic Canada.

Earlier this summer, I sat down with Nova Scotia Business Inc.—a tremendous backer of Entrevestor from Square 1—and explained our vision of a series of supplements to analyse the data we've collected. NSBI liked the concept, and came aboard as the principal sponsor of the first issue. And for that we heartily thank CEO Stephen Lund and his team.

With Entrevestor Intelligence, we show—not tell—what's going on in innovation by examining data. What we've discovered is innovative companies attracting more investment, universities producing more computer science grads, and the commercial potential of the bioimaging facilities in Halifax.

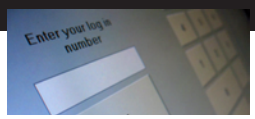
Conclusion: the ecosystem for innovation is improving in Nova Scotia.

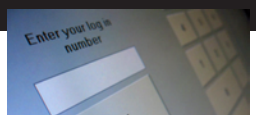
Now, we can't wait to broaden our databank across the region and conduct similar investigations in other provinces.

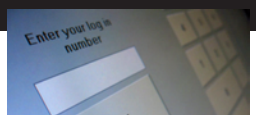
Of course, this whole exercise has been possible because of the generosity and vision of NSBI and our advertisers: HeadSpace Design; McInnes Cooper; Precipice Capital; PropelICT; BoomersWork.ca; Dalhousie University; First Angel Network; National Angel Capital Organization and Progress Media.

We hope all our readers enjoy this supplement and keep following Atlantic Canadian innovation on **www.entrevestor.com**.

Yours,
Peter Moreira







Writing the Code for Digital Employment

Computer Science Numbers Rise 19%

Michael Johnston knew he was on the right track when a Silicon Valley company offered to fly him from Halifax to San Francisco for a job interview.

A native of Palo Alto, California, Johnston is studying computer science at Dalhousie rather than a U.S. university, and he has no regrets. In fact, he's interviewed with tech companies from his old stomping ground, and one offered to fly him to California for a second interview. Others have asked him to stop by their office when he's home.

"From what I've experienced in interviews, my knowledge is more than what they asked for," said Johnston, whose father hails from the Maritimes.

Johnston is part of a trend in universities in Nova Scotia—indeed across the continent—because he chose to study computer science. Students and their parents are realizing that tech offers opportunities for entry-level jobs and career advancement that are all but absent in most other fields.

In fact, computer science enrollment at Nova Scotian universities is increasing at TWICE the level of the U.S. overall.

Check out the facts: the 2012 CRA Taulbee Survey revealed in the spring that 9.6 percent more undergraduates were studying computer science in the U.S. in the past year than in the previous year– the fourth straight year of increases. However the number of computer science and IT undergrads at Dalhousie, Acadia, St. Mary's and Mount St. Vincent universities in 2011-12 increased 17.4 percent over the previous year to 478. And in pure computer science, the number rose 19.3 percent last year to 469. This is an important boon to the innovation industries because many—if not most—tech companies have trouble finding the talent they need to ensure growth.

Enrollment in Computer Science and IT in leading Nova Scotia Universities

	08	09	10	11
Undergrad	384	377	407	478
Grad	213	220	241	255
Total	597	597	648	733

Source: Entrevestor Survey of Dalhousie, Acadia, MSVU, SMU.

Computer Science Enrollment in the U.S.

Undergraduate CS enrollment rose 9.6% in the U.S. in 2011-12.

It's risen four consecutive years.

Bachelor degrees in CS rose 10.5% last year.

Source: 2012 CRA Taulbee Survey

"In terms of enrollment, we're increasing and have been for three years in a row," said Michael Shepherd, the head of the Computer Science Department at Dalhousie University, which now accounts for four out of every five CS students in the province. He added that enrollment will increase again in 2012-13.

The increase marks a dramatic turnaround from earlier in the century, when the dotcom crash drove students from technical courses because of weak employment prospects. In fact, the Information and Communications Technology Council wrote in a 2008 report titled "Developing Tomorrow's Workforce Today" that undergraduate enrollment in Computer Science in Atlantic Canada fell from 1,500 in 2001-02 to just over 500 in 2006-07.

Yet there is still more work needed to encourage young people to learn to write code. Despite years of trying, educators have not persuaded significant numbers of women to enter IT or CS. And occasionally the media still report a lack of jobs in ITC – a blatant falsehood given that the unemployment rate in ITC is 2.3 percent, compared with an overall rate of 7.4 percent in Canada.

Shepherd said Dalhousie is working to make it easier for young people to get a computer science degree by collaborating more closely with the IT program of the Nova Scotia Community College. Under a plan now under negotiation, a student completing a two-year IT course with certain courses at NSCC may soon be able to enter third-year computer science at Dalhousie.

For his part, Johnston has been working to encourage more young people to plan careers in digital industries. This past summer he was a co-founder of CompCamp, a computer camp for teenagers. And he lets people know that jobs in the field are plentiful and fascinating.

"The job opportunities that you can start looking at with a computer science degree are really, really amazing," he said. "It's not just that they pay well but you're doing really interesting things."

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The TechCommunity in Greater Sydney

When co-browsing startup GoInstant sold out for more than $70 million this year, one detail that was lost in the hoopla was the fact that its technology was conceived and pioneered in Sydney, Cape Breton.

The company came together in late 2010 when Sydney-based programmers Gavin Uhma, Kirk MacPhee and David Kim showed up at one of the Tech Socials organized by Robert Pelley, the Innovacorp Investment Manager based in Cape Breton. The featured speaker that night was the agency's Entrepreneur-in-Residence Jevon MacDonald, who was amazed when Uhma, MacPhee and Kim told him about the project they were working on – a co-browsing system that would allow people at different computers to work on the same screen.

It's worth noting that the GoInstant idea and three of the four founders came from Cape Breton Regional Municipality. The fact is that there is a community of tech talent in the former industrial hub that is exceeded in the province only by Halifax.

"There's quite a number of companies in the sector," said Pelley in a recent interview. "I think one feature of the community is the companies are very supportive of one another. There's a real openness here to both give advice and seek advice."

Jevon MacDonald came away impressed by what he found in Sydney, noting that there may be more structured events for developers in Sydney than there are in Halifax. And—as shown with GoInstant—there is an ecosystem of talent in the former steel-town that can help companies to grow.

It wouldn't be accurate to say that it's easy to find top-notch developers in Sydney – there's probably no city in Canada that could make such a claim. But it is possible to find such people.

Consider the case of eLearning company MediaSpark, which is developing GoVenture World, a massive multi-player online game that will train budding entrepreneurs in what it's really like to start and grow your own business. The company has 17 employees, of whom 16 are in Sydney, including its entire development team.

As well as talent, Sydney-based companies have found capital needed for their businesses. Techlink Entertainment, which develops responsible gambling systems and products, has raised $5.5 million in VC investment and $6 million in loans from Nova Scotia Business Inc. World Health Outcomes and Marcato Digital Solutions have also raised VC funding, while MediaSpark received investment from what CEO Mathew Georghiou calls "quasi-venture capitalists".

The tech community in industrial Cape Breton is as varied as you'd find in other centres, ranging from the healthcare systems developed by Corrine McIsaac at Health Outcomes Worldwide to the geological samples analysis software of Celtic Coring Systems. One area of strength is developing technical applications for cultural industries – no doubt a happy byproduct of the rich artistic tradition of the area.

MediaSpark is a publisher of eBooks used around the world, while Marcato Digital has developed administrative systems for musicians and festivals. A newcomer to the space, TixCamps, is now developing software that can help concert organizers assess demand for specific acts.

TECH COMPANIES BASED IN THE SYDNEY AREA

AG RESEARCH
Offers IT products for governments, including solutions for water systems, land management and others.

CELTIC CORING SYSTEMS
Produces CoreTech, a software that analyses core samples taken by the oil and gas industry.

HEALTH OUTCOMES WORLDWIDE
Developed the How2trak software, which helps healthcare providers improve the service they provide patients while reducing costs.

HEIMDALL NETWORKS
Developing software to improve computer network security.

MARCATO DIGITAL SOLUTIONS
Develops and markets administration software for musicians and music festivals.

MEDIASPARK
eLearning company that develops educational games, simulations and social networks.

RESTLESS VISION INTERACTIVE
Game development.

TECHLINK ENTERTAINMENT
Develops and markets responsible gambling systems and products.

TIXCAMP
Developing software that can analyse supply and demand for concerts.

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ETCs: Rising Amid Calls for Reform

It rarely takes an economic reformer long to recommend improvements to the equity tax credit program.

As the 4Front Atlantic conference plots ways to improve Atlantic Canada's economic performance, one instrument it is examining to drive innovation is a reform to ETCs across the region. And when regional development guru Donald Savoie filed his 2010 report on the Nova Scotia economy, a major reform he advocated was adjustments to ETCs.

ETCs are a fundamental means of attracting investment to young companies, thus boosting innovation. The good news is that the amount of investment in Nova Scotia using ETCs last year almost hit a record level of $14.5 million. Yet experts believe there's a lot more that could be done if the system allowed larger investments and more flexibility.

Equity tax credits allow individuals to buy shares in small Nova Scotia companies (less than $25 million in assets) and the government lets these taxpayers subtract 35 per cent of the total from their provincial income tax. The maximum qualified investment they can make in one year is $50,000, allowing them a maximum tax saving of $17,500.

With this $50,000 maximum, Nova Scotian companies have raised a total of $115.7 million in the past decade, according to data from the Department of Finance. The program was introduced in 2002, dovetailing nicely with the creation of Community Economic Development Investment Funds, or Cedifs, under which the government encourages Nova Scotians to invest in local enterprises.

The level of investments using ETCs reached a record $16.6 million in 2006, before plunging with the recession. Yet they've been climbing for each of the last three years, almost breaking the record last year. And money has been flowing into innovative and creative sectors of the economy: over the 10-year period, the most popular segments are the arts and recreation with $18.8 million and "professional, scientific and technical services" with $18 million.

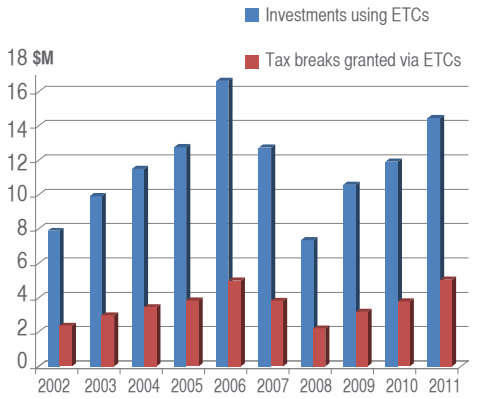
So what reforms are needed? First off, Savoie called on the government to increase the investment limit from $50,000 to $250,000, to encourage more investment.

"Companies I work with are seeing a growing number of investors approach the maximum investment limit of $50,000," said Keith Abriel, an independent financial consultant who works with a range of innovative ventures. "As a result of a number of recent success stories, there seems to be a growing appetite for both an increased maximum investment level and a comparable tax credit for corporations making such investments."

There is also a movement afoot to implement a regional ETC, under which people living anywhere in Atlantic Canada would receive a tax break if they invested in a company based in any part of the region.

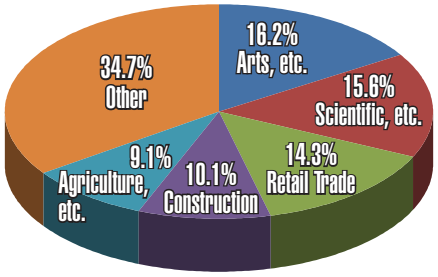
INVESTMENT FROM EQUITY TAX CREDIT PER YEAR (2002-2011)

YEAR	AMOUNT INVESTED	TAX CREDITS AWARDED
2002	7.8	2.4
2003	9.9	3.0
2004	11.5	3.5
2005	12.8	3.8
2006	16.6	5.0
2007	12.7	3.8
2008	7.4	2.2
2009	10.6	3.2
2010	11.9	3.8
2011	14.5	5.1
TOTAL	115.7 MILLION	35.7MILLION



SECTORAL TARGETS FOR INVESTMENT USING ETCS 2002-2011

INDUSTRY	TOTAL INVESTMENT ($M)	%age
Arts, Entertainment and Recreation	18.8	16.2
Professional, Scientific and Technical Services	18.0	15.6
Retail Trade	16.5	14.3
Construction	11.7	10.1
Agriculture, Forestry, Fishing and Hunting	10.5	9.1
Other	40.2	34.7
TOTAL	115.7	100



CEDIFS IN THE LAST 10 YEARS . . .

- **Total investments in CEDIFS totaled $48.6 million – equal to 42% of the total investments using ETCs.**
- **$35.7 million in CEDIFs went to companies outside HRM – 73% of the total.**
- **New Dawn Holdings of Sydney has raised a record $6.88 million in seven rounds of CEDIF funding.**
- **The largest Cedif fundraising by a single-purpose company was Wind4All Inc.'s $2.351 million funding from 154 investors last year.**

Source: NS Department of Finance

IRAP Funding in Nova Scotia 2008-12

The good news: Ottawa's 2009 stimulus program included a $200 million, two-year boost for the National Research Council's Industrial Research Assistance Program, or Irap, which among other things helps startups fund R&D.

The bad news: it had to end.

The NRC's impeccable data show Irap funding ballooned during the Economic Action Plan. Over the two-year period, the funding in Nova Scotia was on average 90 percent higher than 2008-9. However, funding declined 82 percent when the stimulus funding ended in the year ending March 31, 2012.

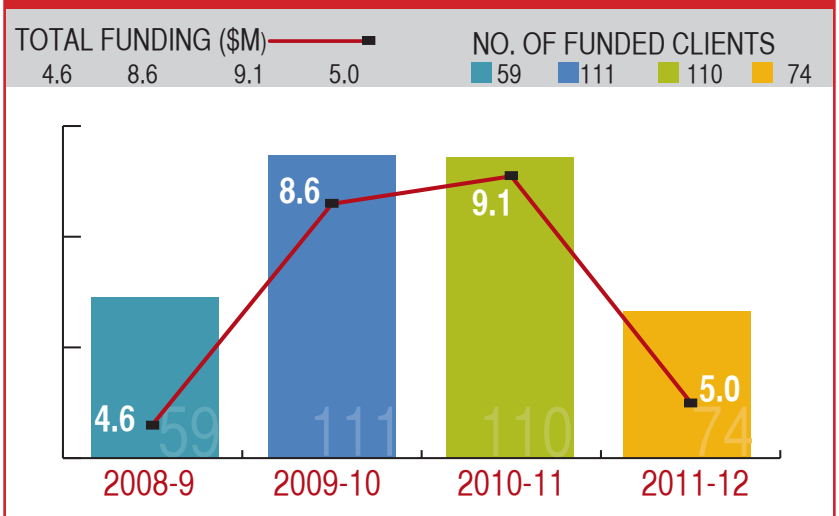
So is this a bad news story? Nope. The goal of stimulus spending is to provide an economic underpinning that continues after the stimulus expires.

As the accompanying chart shows, NRC-Irap aided 111 companies in 2009-10 and 110 the next year – almost double the 59 companies funded in 2008-9. Scores of young companies received extra assistance during a critical phase of their development, and are likely still benefiting.

The money also helped some key sectors. Funding for Agriculture & Food increased 53 percent to $1.7 million in the first year, an obvious boon to the agritech segment.

And no doubt, as with other segments, that benefit is still being felt.

IRAP FUNDING BY SECTOR IN NS IN 2011-12



SECTOR	FUNDS	PERCENTAGE
ICT	$1.40M	27.8%
Health & Life Science	$1.17M	23.3%
Agriculture & Food	$733,000	14.5%
Energy & Environment	$587,000	11.6%
Other	$1.15M	22.8%
TOTAL	**$5.04M**	**100%**

Source: National Research Council

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Imaging Platform Represents $50 Million in Investment

hospitals have worked to channel about $50 million into imaging technologies in Halifax, and the number of people involved in the imaging segment has grown from three to 50.

"I often compare a standard MRI to a Toyota Camry or a Honda Civic – a dependable car that gets you from A to B," said Ryan D'Arcy, who until recently was a Senior Research Officer with the NRC in Halifax. "What we have in imaging in Halifax is Formula 1."

He added that the Halifax imaging cluster is special because it is part and parcel of the clinical work done in Halifax, so it delivers the most social good and is more effective as an R&D tool. The investment and the strategy have established Halifax as one of Canada's leading centres for imaging technology.

"I often compare a standard MRI to a Toyota Camry… What we have in imaging in Halifax is Formula 1."

By 2000, Halifax had established itself as a key centre in neurosciences, and the NRC and others in the medical community decided to develop its imaging capacity, in part because the ability to scan the brain complemented its competency in neurology.

The growth of the segment began in 2002 with the installation of the NRC's Varian 4 Tesla MRI system for clinical imaging in the Neuroimaging Research Lab. Steven Beyea, who has succeeded D'Arcy after the latter transferred to Vancouver, said the growth since then has featured additions by NRC and other players, both in the private and public sectors.

For example, two of the major building blocks were the $10 million Biomedical MRI Research Laboratory, installed in 2007, and the $6 million Lab for Clinical MEG at the IWK a few years later.

But Beyea stressed that the community also benefited from the imaging capacity created by other groups such as Halifax Biomedical, a Mabou company that has developed a system to assess the progress of orthopaedic implants by taking two X-rays simultaneously. What's interesting about Halifax Biomed and a few other companies is they have not grown out of the imaging platform so much as they developed their own imaging capacity, in essence becoming part of the platform.

As well as Halifax Biomed's state-of-the-art scanners, Halifax now has imaging facilities that can give real-time representations of soft tissue, and can scan the brain without placing patients in uncomfortable machines (a boon when treating children or patients with dementia).

It has also unleashed a wave of innovation. The imaging technology accelerates the development of drug development companies like IMV, but it is also the bedrock on which new imaging and neurological companies are built.

For example, The Halifax Consciousness Scanner, which can monitor the brain to detect concussions in real time, was developed and patented by the NRC's Halifax imaging labs. This technology has been exclusively licensed to Mindful Scientific Inc. of Halifax, which is now commercializing it.

And so the imaging platform keeps on giving.

The NRC's part of the imaging cluster in Halifax includes:

Located in the Neuroimaging Research Lab in the Halifax Infirmary:

- **4-T Whole Body MRI for human clinical research**
- **High Resolution 128-Channel EEG for human clinical research**
- **Located in the Biomedical MRI Research Lab in the IWK:**
- **3-T MRI for pre-clinical research**
- **PET/CT for pre-clinical research**

Located in the Laboratory for Clinical MEG in the IWK:

- **306-Channel Magnetoencephalography (MEG) for human clinical research**
- **32-Channel EEG (integrated with the MEG) for human clinical research**

The NRC's imaging labs in Halifax have recently supported or are supporting the commercial research of these companies:

- **Immunovaccine Technologies**
- **Mindful Scientific**
- **Soricimed Inc**
- **Treventis Inc**
- **Dartmouth Medical Research**
- **DeNovaMed**
- **Elekta Neuromag (A Swedish company whose Canadian R&D operations are in Halifax)**

Other Nova Scotian companies independently developing imaging products:

- **Resolution Optics**
- **Halifax Biomedical**
- **Densitas**

Continued from page 1

More VC Just One Element in Improving Ecosystem

"It would be seen as an appropriate raise for the type of work we're doing," said Munro.

His ambitious plan exemplifies an unprecedented trend in innovation in Nova Scotia right now: young, Nova Scotian-owned companies with scalable innovation are accessing growing amounts of capital, and they're operating in an ecosystem that has improved dramatically in just two years. In this supplement, we will demonstrate just how radically the environment is changing – and VC funding is simply one element of it. The data revealed in the following pages show that in the last three years there have been rising levels of funding via VC, equity tax credits, Community Economic Development Investment Funds. Even the National Research Council's Irap program benefited from two years of stimulus spending, and was able to pump more money into Nova Scotian companies.

Certainly the VC numbers are impressive. Last year, two companies announced eight-figure fundraisings: Unique Solutions of Dartmouth raised $30 million from Northwater Capital of Toronto, and LED Roadway Lighting of Halifax raised $12 million from NSBI Venture Capital, Cycle Capital and founder Chuck Cartmill.

Now three companies – three that have explained their plans to Entrevestor; there could be more – plan to raise as much as $10 million. Aside from Halifax Biomed, LiveLenz, Inc. of Centreville will soon be looking for $8 million to $10 million and STI Technologies Ltd. of Halifax for $5 million to $10 million. Certainly the tech, biotech, cleantech and other technology-rich companies in Nova Scotia will be raising more money in the next two years. Entrevestor's estimate, revealed on Page 13, is that Nova Scotia's innovative companies will raise about $30 million in VC financing alone in each of the next two years.

That's a tall order, given that we've surpassed $20 million only once, in 2011, thanks largely to the massive Unique Solutions and LED Roadway financings. But it's an order that could be met.

First of all, outside investors are sinking money into young Nova Scotian companies as they have never done before in our lifetime. So far this year most of the non-Atlantic-province financing for innovative companies has come through angels – that is, individuals. We spoke with 10 Nova Scotian companies that raised a total of $4.5 million in angel financing in the past year, and about $1.8 million, or 40 percent, of that came from outside the region.

In the venture capital realm, there has only been one financing from outside the region in the first eight months of 2012. That was the $500,000 investment in Scotia Motor Works by York Bridge Capital of Toronto. That deal in itself highlights one improvement in the ecosystem – a greater willingness by universities to spin out research into bona fide businesses. Scotia Motor Works was set up mainly to commercialize the research of Braden Murphy, a Masters student in mechanical engineering, and Assistant Professor Darrel Doman.

The contribution of universities shows up frequently in this publication, for universities were instrumental in developing the imaging facilities in Halifax and the agritech labs in Truro. And universities – Dalhousie University in particular – are further aiding the ecosystem by increasing the number of computer science students, helping to solve a critical shortage of talent in the region. In fact, the number of students enrolled in computer science in Nova Scotia last year rose by 19 percent – about twice the growth rate of the U.S.

There are other signs of improvement in the environment for innovation in the province. The birth of the regional venture capital fund will help. And the growth of PropelICT, the New Brunswick tech accelerator, into a regional program will hugely benefit young tech companies in Nova Scotia.

The result is going to be more funding, further improvements to the ecosystem and in the end more innovation.

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"2nd Act and Oris4 would not exist without the strategic work of Chris Dobbin and Precipice Capital. They were instrumental in raising the initial seed funds we needed to ensure a successful start to our business. They understood our business style and introduced us to a network that reaches far beyond this region. We're proud to have Precipice as a strategic partner and investor in 2nd Act."

Andrew Doyle, Co-founder and CEO, 2nd Act Innovations

Precipice Capital is an award-winning financial advisory services firm based in Halifax.
The Company has received national and regional recognition for its services to Atlantic Canada's entrepreneurs seeking growth capital.

One of those clients is 2nd Act Innovations, a sales-focused technology company specializing in the field of Enterprise Content Management. With Precipice's guidance, 2nd Act was able to secure significant funding to further the success of its primary product, Oris4. This software solution allows organizations to easily store, find, use and share their own information.

We're proud to help our clients establish themselves as Atlantic Canadian success stories.

To find out how Precipice Capital can help you, visit us at precipicecapital.com

Chris Dobbin, CA
President, Precipice Capital

Major Fundings Will Push Up VC Totals

So how much equity funding will Nova Scotian innovators raise in the next two years? Entrevestor's guess is about $30 million per year in venture capital alone.

This chart shows the funding targets of just nine Nova Scotian companies, and collectively they hope to raise as much as $47.5 million in equity in the next two years. Another eight or nine companies have told Entrevestor privately that they're looking for about $10 million, which increases the amount we know about to $56.5 million. If we divide that over two years, we're almost up to that $30 million a year mark – a lot when you consider that other than last year, Nova Scotia has never raised more than $20 million in a year.

Some of these companies will settle for smaller amounts, and of course they're not the only ones raising money. For example, Unique Solutions and LED Roadway Lighting, the companies that raised the most money in 2011, could tap investors, and if so they'd raise a lot.

Meanwhile, new companies will come along that will land VC funding. Innovacorp, for example, shows no inclination to slow down in its investment.

And don't forget angel investors. The recent growth in equity tax credits shows that Nova Scotians are plowing more money into young companies. But these companies are also using their networks to draw funds from other parts of the world. Data on angel investment is scarce and never complete, because young companies rarely broadcast what they're doing. Yet 10 companies have told Entrevestor that they've raised a total of $4.5 million from angels in the past year or so, and about 40 percent of it came from investors outside the region.

Non-local investors are now more intrigued by Atlantic Canadian tech than ever before, and there's no way this trend will reverse. If there is another Nova Scotian exit in the next year or so, that trend will only accelerate.

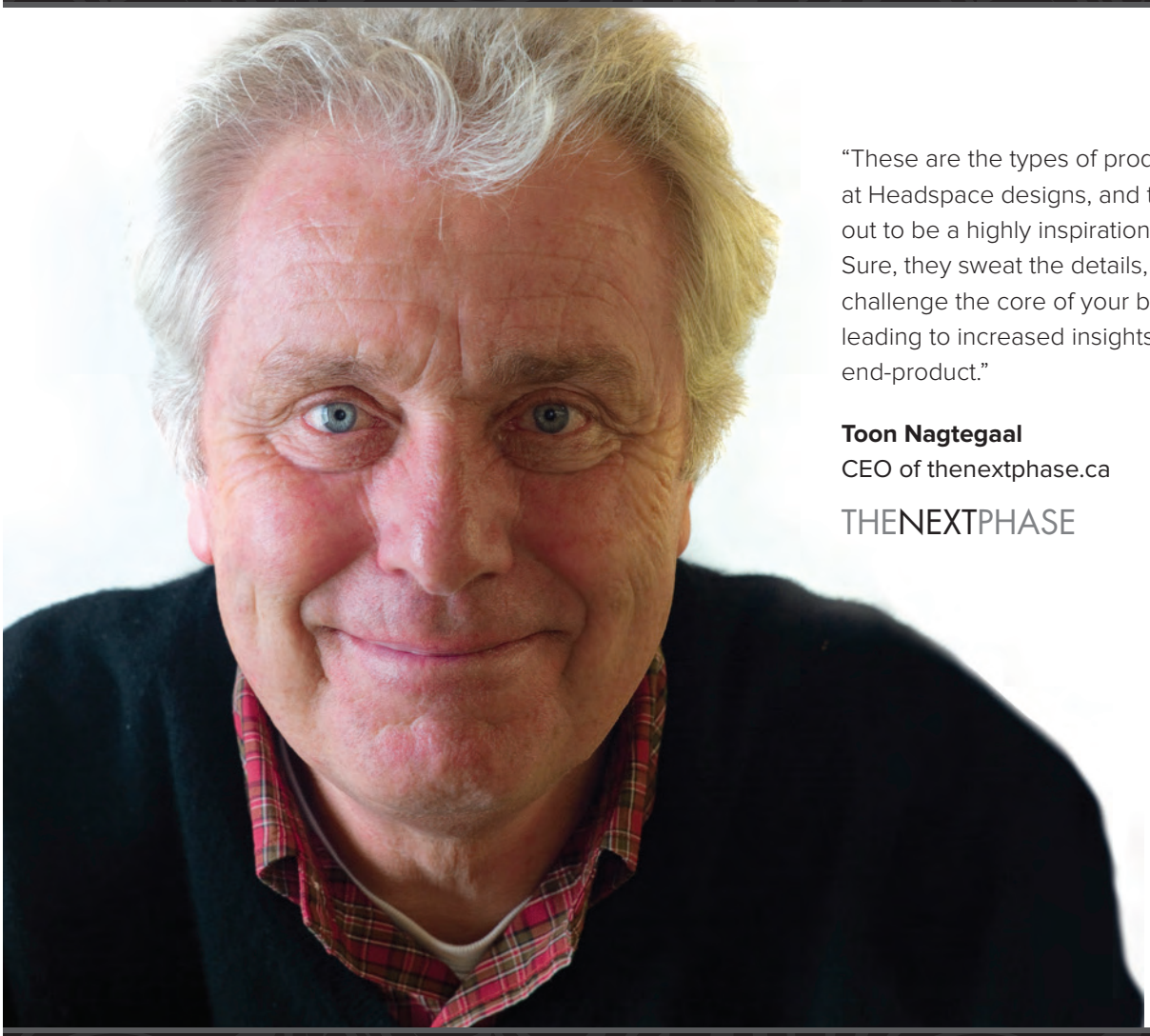
So here's a bold prediction: More than $30 million in venture capital investment in each of the next two years (which we'll be able to verify) and more angel investing (much of which will be happening quietly out of our view).

SELECT NS COMPANIES ' EQUITY FUNDING TARGETS 2012-14

Company	Target
Halifax Biomedical	$10M
LiveLenz	$8M-$10M
STI Technologies	$5M-$10M
TruLeaf Sustainable	$3.5M*
CarbonCure	$3M-$5M
2nd Act Innovations	$1M-$2M
DeNovaMed	$2M
Karma Gaming	$3M
MediaBadger	$2M
TOTAL	**UP TO $47.5M**

*TruLeaf is raising $7 million in debt and equity, and we arbitrarily divided it equally between the two.

“Purposeful, powerful and beautifully crafted.”



“These are the types of products the team at Headspace designs, and their creation turns out to be a highly inspirational collaboration. Sure, they sweat the details, but they also challenge the core of your business model, leading to increased insights and a better end-product.”

Toon Nagtegaal
CEO of thenextphase.ca

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Oceans

OCEAN INDUSTRIES IN NOVA SCOTIA

60 innovative companies in Ocean Industries

450 PhDs engaged in ocean research

$5 billion in annual economic activity

15% of Nova Scotia's GDP

DEALS IN OCEAN INDUSTRIES

Date:	2012
Co.:	Ocean Nutrition
Buyer:	Royal DSM
Price:	$540M
Date:	2012
Co.:	Secunda Marine's 10 vessels
Buyer:	Birch Hill Equity Partners
Price:	N/A
Date:	2011
Co.:	Satlantic Inc.
Buyer:	Sea-Bird Ocean Measurement
Price:	N/A
Date:	2008
Co.:	Innovacorp's Welaptega stake
Buyer:	Private investor
Price:	N/A
Date:	2007
Co.:	Secunda Marine Services
Buyer:	McDermott Int'l
Price:	$270M
Date:	2007
Co.:	Seimac
Buyer:	Cobham Plc
Price:	N/A
Date:	2003
Co.:	Vemco
Buyer:	Amirix Systems
Price:	N/A

Joe Hood's company exemplifies one of Nova Scotia's strongest economic segments – and a sector that venture capital funds have had the least impact on.

Hood is the CEO of Akoostix Inc., which develops acoustic-based surveillance systems for maritime industries and operations. Nova Scotia has the highest concentration of navigational and guidance instruments manufacturers in North America. Dartmouth-based Akoostix has increased revenues by two-thirds in two years, and is still on a growth trajectory.

Ocean industries are big and growing in the province. The sector sprang to public attention this year when Ocean Nutrition Ltd. sold out to Royal DSM of the Netherlands for $540 million. The ONC sale highlights two facts about the oceans sector that are rarely discussed and seem to contradict one another.

FACT 1: The oceans segment has had plenty of exits. An exit is the sale of a company, which allows an investor to cash in on his or her investment. Exits are rare in Nova Scotia, but the Oceans segment has experienced quite a few. As well as the $540 million ONC deal, Secunda Marine Services sold out to McDermott International for $270 million five years ago, then the buyer in that deal sold on Secunda's 10 Marine vessels this year to Birch Hill Equity Partners. There's even been a venture capital exit: Innovacorp sold its stake in Welaptega Marine to a private investor in 2008.

Fact 2: Even though exits are a critical aspect of venture capital, VC funds have been slow to invest in Oceans companies. Since Innovacorp sold its stake in Welaptega, the only Nova Scotian ocean company to attract VC backing has been Dartmouth-based Ascenta, which has a $4 million investment from Avrio Ventures of Calgary. Logic would dictate fund managers would be eager to get into a sector with so many exits.

Christopher Moyer, an investment manager, said VC funds don't generally look at "Oceans" as an investment category because it's a fairly vague description. Some fund managers may target a healthcare or communications company, and it may just so happen to have a marine application. So it would be wrong to say fund managers have avoided the sector, he said.

Many entrepreneurs in the Oceans segment indicate that they would accept VC investment under the right terms, but they don't go out of their way to look for it.

Hood, for example, said he was leery of bringing in "external" influences, such as having VC investors on his board. "At Akoostix, our whole purpose in life is to get involved in the science at the ground level," he said. Instead of VC funding, the company has received financing through non-dilutive programs, including the National Research Council's Irap program, the Scientific Research and Experimental Development, or SR&ED, program and the Natural Sciences and Engineering Research Council of Canada program.

Mark Wood, the CEO of Great Village-based underwater acoustics engineering company Instrument Concepts, added that many players in the Oceans space just are not hung up on the concept of an exit strategy. "A lot of people who run these companies are like me," he said. "They're more committed to the industry than to an exit."

Agritech: Growth Needed to Fill Capacity

When Gregg Curwin wanted to set up a development farm for TruLeaf Sustainable Agriculture Ltd. last year, he quickly keyed in on the research facilities associated with the Nova Scotia Agricultural College in Truro.

TruLeaf grows vegetables and other plants indoors, in stacks of trays under LED lights powered by renewable electricity. And CEO Curwin needed the lab space to beta-test his process and the human resources to help set up, monitor and analyse the system.

Today, TruLeaf's experimental farm unit is up and running at the Perennia Innovation Centre, part of a new publicly owned corporation that combines the former innovation components of NSAC —the Atlantic BioVenture Centre and AgriTECH Park—and AgraPoint, an agriculture and food safety consulting agency owned by the province. NSAC became part of Dalhousie University this year, and it was decided the best way forward was to integrate these entities under a single independent corporation owned by the provincial government to offer a continuum of services from food production to new product development.

And one of the key things they are now doing is working with private companies and individuals to enhance the quality, inventiveness and marketing of food production and processing in the province. Food was a $3.2 trillion industry worldwide in 2004, and has only grown since then. And environmental and food security concerns have greatly increased the value of food commodities. Yet Nova Scotia's agriculture industry produced only $540 million last year – about 1.5 percent of GDP.

Perennia wants to encourage innovation—and therefore higher income—in the sector. The thinking is that traditional crops or livestock are fraught with risk and often low prices, but moving them up the value chain with innovation and/or creative marketing can produce higher margin products and improve the industry.

"The agricultural traditional sector has to move forward," said Perennia Chief Executive Officer Jo Ann Fewer in an interview. "We see some companies moving forward, and once you get them in and add them up you've got a cluster."

Richard Ablett, Perennia's Chief Science Director, said Perennia's BioVentures Division and Innovation Centre serve four main functions: they work to establish an agri-biosciences cluster supporting rural Nova Scotia; they serve as a product and process development research centre for the Nova Scotia food industry; they work with international companies that could develop new value addition projects in Nova Scotia; and they work to create spin-off companies from Nova Scotian university research.

Undoubtedly, Perennia's most interesting work is carried out in the research facilities at its 25,000-square-foot Innovation Centre, where staff from the research community work with agricultural and business experts. In this capacity, it is helping an Annapolis Valley summer savory grower develop a new product line, a Nova Scotia vineyard owner develop a new high end product, and dairy farmers from the Truro area devise a marketable form of smoke-infused cheese.

Although the Perennia group is working with about 50 agri-bio producers and processors currently producing or developing new products or processes, and several hundred primary producers, its execs believe the sector would grow more quickly if more Nova Scotian primary producers were developing and selling higher margin value added foods.

"We know we've got significant public research facilities and less private sector receptor capacity in the Maritimes," said Ablett. "That provides a solid base for new innovation within the agricultural community."

Perennia, indeed Nova Scotia, doesn't quite have an agritech or foodtech cluster yet, but it does have some advantages that should help develop the sector. The centre has developing research capacity, a strong staff and a clutch of growing companies that are developing products. It also has external resources in Halifax, Kentville and Charlottetown, the home of Foodtech Canada and the Crops and Livestock Research Centre.

The work in Nova Scotian agribusiness also extends far beyond simply producing new foods. Performance Genomics Inc., which was spun out of NSAC, is now working on gene-based research that could extend the life of cattle. And in Port Hood, Cape Breton, dairy farmer Chris van den Heuvel has launched Fireblade Software Development, which has developed a web-based financial and reporting key performance indicator and benchmarking application for dairy farmers (though it has other applications as well).

NOVA SCOTIA'S BURGEONING AGRITECH COMPANIES

Maritime Bioventures, Martock and Perennia Innovation Centre

Maritime Bioventures use a bioactive extraction and recovery processing unit to make both kosher certified and food-grade products. Their first project using the extraction unit will be making a seaweed-based bioactive extract for use in the functional food market.

Truleaf Sustainable Agriculture Inc., Halifax and Perennia Innovation Centre

TruLeaf's Smart Plant System integrates existing greenhouse and hydroponic growing technologies to bring traditional farming to non-traditional locations. The system uses LED lighting, enabling clients to produce sustainable, nutritious, leafy plants year-round in scalable, on-site locations such as industrial parks, grocery stores, homes and office buildings. The process reduces water consumption and spoilage by more than 75% compared to traditional growing methods.

Farmer John's Herbs, Canning

Farmer John's Herbs now sells dried summer savory, other herbs, and dip, stuffing, baked goods and chowder mixes. Work is currently being done to identify other uses for summer savory, as well as its byproducts, such as stem, that have traditionally gone unprocessed.

Fenol Farms

Fenol Farms is projected to be a 100–200 acre farm that concentrates on growing botanical medicinals and producing high-value extracts and preparations primarily for the export market. It will produce a flagship line of products based on resveratrol, isolated from Polygonum cuspidatum, a plant that grows very well in Nova Scotia's climate.

Source: Perennia Innovation Centre